

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1-101. (Canceled).

102. (Currently Amended) An isolated nitrile hydratase comprising an α -subunit and a β -subunit, wherein:

(a) said the α -subunit is a variant of the peptide comprises the polypeptide of SEQ ID NO: 1, wherein except that the amino acid sequence of said variant of the peptide the polypeptide of SEQ ID NO: 1 is substituted at positions:

36th to Met, or

71st to His, or

148th to Asp, or

204th to Arg, Lys, Trp or Thr, or

148th and 204th to Asp and Arg respectively, or

36th, 148th and 204th to Met, Asp and Arg respectively,

36 and 126 to Met and Tyr respectively,

6, 36, and 126 to Met, Thr and Tyr respectively, or

19, 71, and 126 to His, Val and Tyr respectively; and

(b) the β -subunit comprises the polypeptide of SEQ ID NO: 2.

103-104. (Canceled).

105. (Currently Amended) The nitrile hydratase according to claim 103102, wherein the β -subunit isconsists of the amino acid sequencepolypeptide of SEQ ID NO: 2.

106. (Currently Amended) The An isolated nitrile hydratase comprising an α -subunit and a β -subunit, according to claim 102wherein:

(a)(i) the α -subunit comprises the polypeptide of SEQ ID NO: 1, except that the amino acid sequence of the polypeptide of SEQ ID NO: 1 is substituted, wherein the β -

subunit is a variant of the peptide of SEQ ID NO: 2, wherein the α -subunit is substituted amino acid at positions 36th, 148th and 204th of SEQ ID NO: 1 to Met, Asp and Arg respectively, and (ii) the β -subunit comprises the polypeptide of SEQ ID NO: 2, except that the amino acid sequence of the polypeptide of SEQ ID NO: 2 is substituted amino acid at positions 41st, 51st and 108th of SEQ ID NO: 2 to Ile, Val, and Asp respectively;

(b)(i) the α -subunit comprises the polypeptide of SEQ ID NO: 1, except that the amino acid sequence of the polypeptide of SEQ ID NO: 1 is substituted at positions 6, 36 and 126 of SEQ ID NO: 1 to Thr, Met and Tyr respectively, and (ii) the β -subunit comprises the polypeptide of SEQ ID NO: 2, except that the amino acid sequence of the polypeptide of SEQ ID NO: 2 is substituted at positions 10, 118, and 200 of SEQ ID NO: 2 to Asp, Val and Glu respectively;

(c)(i) the α -subunit comprises the polypeptide of SEQ ID NO: 1, except that the amino acid sequence of the polypeptide of SEQ ID NO: 1 is substituted at positions 19, 71 and 126 of SEQ ID NO: 1 to Val, His and Tyr respectively, and (ii) the β -subunit comprises the polypeptide of SEQ ID NO: 2, except that the amino acid sequence of the polypeptide of SEQ ID NO: 2 is substituted at positions 37, 108, and 200 of SEQ ID NO: 2 to Leu, Asp, and Glu respectively;

(d)(i) the α -subunit comprises the polypeptide of SEQ ID NO: 1, except that the amino acid sequence of the polypeptide of SEQ ID NO: 1 is substituted at positions 19, 71 and 126 of SEQ ID NO: 1 to Val, His and Tyr respectively, and (ii) the β -subunit comprises the polypeptide of SEQ ID NO: 2, except that the amino acid sequence of the polypeptide of SEQ ID NO: 2 is substituted at positions 37, 108, and 200 of SEQ ID NO: 2 to Val, Asp, and Glu respectively; or

(e)(i) the α -subunit comprises the polypeptide of SEQ ID NO: 1, except that the amino acid sequence of the polypeptide of SEQ ID NO: 1 is substituted at positions 148 and 204 of SEQ ID NO: 1 to Asp and Arg respectively, and (ii) the β -subunit comprises the polypeptide of SEQ ID NO: 2, except that the amino acid sequence of the polypeptide of SEQ ID NO: 2 is substituted at positions 108, and 200 of SEQ ID NO: 2 to Asp, and Glu respectively.

107-108. (Canceled).

109. (Currently Amended) An isolated nitrile hydratase comprising an α -subunit and a β -subunit, wherein:

(a) the α -subunit comprises the polypeptide of SEQ ID NO: 1; and

(b) the β -subunit is a variant of the peptide comprises the polypeptide of SEQ ID NO: 2, wherein said except that the amino acid sequence of variant the polypeptide of the SEQ ID NO: 2 is substituted at positions:

10th to Asp, Glu, Trp, Gly, Tyr or Cys, or

32nd to Gly, or

37th to Thr, Ala, Leu, Ile or Val, or

41⁵t to Glu, Thr, Ala, Leu, Ile, or Val, or

46th to Gly, Tyr, Leu, Lys or Asp, or

48th to Gly, Ala, Val, Ser, Thr or Arg, or

51st to Ala or Val, or

72nd to Phe, or

118th to Ala, Leu, Ile or Val, or

127th to Ala, Val or Ser, or

146th to Gly, or

160th to Leu or Trp, or

186th to Glu, Asp, Lys, Arg, Asn, Ser or Gly, or

217th to Gly, or

160th and 186th to Trp and Arg respectively, or

127th, 160th and 186th to Ser, Trp and Arg respectively,

51 and 108 to Val and Asp respectively,

118 and 200 to Val and Glu respectively,

10, 118 and 200 to Asp, Val and Glu respectively,

37, 108 and 200 to Leu, Asp and Glu respectively,

37, 108 and 200 to Val, Asp and Glu respectively,

41, 51 and 109 to Ile, Val and Asp respectively,

46, 108 and 212 to Lys, Arg and Tyr respectively, or

48, 108 and 212 to Val, Arg and Tyr respectively.

110. (Canceled).

111. (Currently Amended) The nitrile hydratase according to claim 109, wherein the α -subunit ~~has the amino acid sequence~~ consists of the polypeptide of SEQ ID NO: 1.

112. (Canceled).

113. (Currently Amended) An isolated nitrile hydratase comprising an α -subunit and a β -subunit, wherein:

(a)(i) ~~the α -subunit is a variant of the peptide~~ comprises the polypeptide of SEQ ID NO: 1, ~~wherein the β -subunit is a variant of the peptide of SEQ ID NO: 2, wherein amino acid of the α -subunit~~ except that the amino acid sequence of the polypeptide of SEQ ID NO: 1 is substituted at positions 6th, 19th and 126th of SEQ ID NO: 1 to Thr, Val and Tyr respectively, and (ii) ~~amino acid of the β -subunit~~ comprises the polypeptide of SEQ ID NO: 2, except that the amino acid sequence of the polypeptide of SEQ ID NO: 2 is substituted at positions 46th, 108th and 212th of SEQ ID NO: 2 to Lys, Arg and Tyr respectively; or

(b)(i) ~~the amino acid of the α -subunit~~ comprises the polypeptide of SEQ ID NO: 1, except that the amino acid sequence of the polypeptide of SEQ ID NO: 1 is substituted at positions 6th, 19th and 126th of SEQ ID NO: 1 to Thr, Val and Tyr respectively, and (ii) ~~amino acid of the β -subunit~~ comprises the polypeptide of SEQ ID NO: 2, except that the amino acid sequence of the polypeptide of SEQ ID NO: 2 is substituted at positions 48th, 108th and 212th of SEQ ID NO: 2 to Val, Arg and Tyr respectively, or

(c)(i) ~~the amino acid of the α -subunit~~ comprises the polypeptide of SEQ ID NO: 1, except that the amino acid sequence of the polypeptide of SEQ ID NO: 1 is substituted at positions 6th, 19th and 126th of SEQ ID NO: 1 to Ala, Val and Tyr respectively, and (ii) ~~amino acid of the β -subunit~~ comprises the polypeptide of SEQ ID NO: 2, except that the amino acid sequence of the polypeptide of SEQ ID NO: 2 is substituted at positions 127th, 160th and 186th of SEQ ID NO: 2 to Ser, Trp and Arg respectively.

114. (Previously Presented) An isolated host cell comprising the nitrile hydratase of claim 102.

115. (Previously Presented) An isolated host cell comprising the nitrile hydratase of claim 109.

116. (Previously Presented) An isolated host cell comprising the nitrile hydratase of claim 113.

117. (New) An isolated host cell comprising the nitrile hydratase of claim 106.

118. (New) An isolated nitrile hydratase comprising an α -subunit and a β -subunit, wherein:

(a) the α -subunit comprises the polypeptide of SEQ ID NO: 1, except that the amino acid sequence of the polypeptide of SEQ ID NO: 1 is substituted at one or more positions selected from the group consisting of positions 36, 71, 148, and 204 by another amino acid; and

(b) the β -subunit comprises the polypeptide of SEQ ID NO: 2, except that the amino acid sequence of the polypeptide of SEQ ID NO: 2 is substituted at one or more positions selected from the group consisting of positions 10, 32, 37, 41, 46, 48, 51, 72, 118, 127, 146, 160, 186, and 217 by another amino acid.

119. (New) An isolated host cell comprising the nitrile hydratase of claim 118.